Small Business Innovation Research/Small Business Tech Transfer

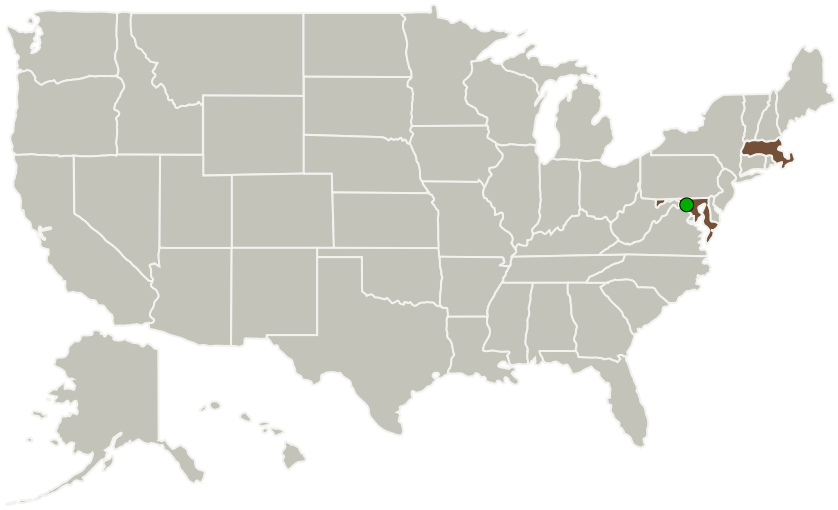
High Performance Spatial Filter Array Based on Single Mode Fiber Bundle, Phase II

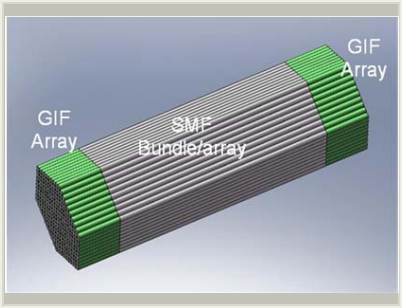
Completed Technology Project (2013 - 2015)

Project Introduction

In Phase I project, by leveraging on Agiltron's experience in optical fiber components and our unique fabrication procedure of fiber array, we successfully designed and fabricated the samples of the gradient index fiber (GIF) lens arrays and single mode (SM) fiber arrays for composing a coherent single-mode fiber (SMF) spatial filter array (SFA), which demonstrated the promising results to meet NASA's requirements for the applications in planet exploration. This novel GIF and SMF array based SFA has several advantages over the current approach in small aberration, low insertion loss, high uniformity, high robust and stability. In Phase II, Agiltron will further improve and optimize the fabrication procedure to make the prototype of GIF and SMF array based SFA for NASA applications. This SFA prototype will have more than 1000 effective fiber counts in the requested aperture. Furthermore, the improvements of precision fabrication procedure developed in Phase I will assure that center-to-center deviation in GIF and SMF arrays' deviation is less than +/-0.2μm. At the end of the Phase II, the novel SFA prototype will be provided with fully function integration and environmental test to insert into the experiment system of NASA for further comprehensive evaluation.

Primary U.S. Work Locations and Key Partners





High Performance Spatial Filter Array Based on Single Mode Fiber Bundle Project Image

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Organizations Performing Work	Role	Type	Location
AGILTRON Corporation	Lead Organization	Industry	Woburn, Massachusetts
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	Massachusetts

Project Transitions

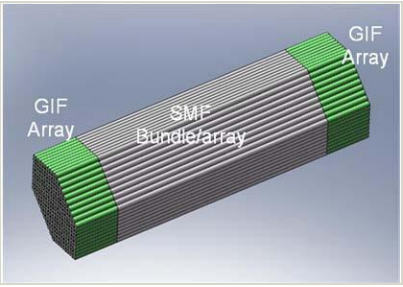
January 2013: Project Start

April 2015: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137342)*

Images



Project Image
High Performance Spatial Filter Array Based on Single Mode Fiber Bundle Project Image
(https://techport.nasa.gov/image/126968)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

AGILTRON Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

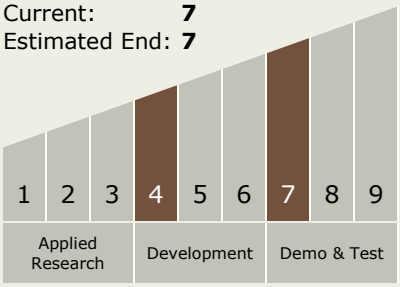
Carlos Torrez

Principal Investigator:

Yan Liu

Technology Maturity (TRL)

Start: **4**
Current: **7**
Estimated End: **7**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System